RICE | RCEL
Rice Center for Engineering Leadership

Dr. David Van Kleeck, Professor in the Practice of
Engineering Leadership

ENGI 140: Engineering Leadership Development

Fall 2016, CRN #11903 , W 3:00-4:59 p.m., Location DCC 113

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Office Hours: Tuesday & Thursday, 11:00-2:00 p.m. Appointments can also be scheduled at other times.

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Office Hours: Tuesday & Thursday, 11:00 – 2:00 pm. Appointments can also be scheduled at other time.

Readings

1. David A. Whetten and Kim S. Cameron (2011). *Developing Management Skills (8th or 9th ed.)* Pearson Prentice Hall.
2. National Academy of Engineering. *The Engineer of 2020: Visions of Engineering in the New Century*. Washington, D.C.: The National Academies Press. Available free online.
3. A reading packet is required and available through Harvard Business School Publishing. I will provide a URL through which these can be purchased directly from Harvard University.
4. Required readings will also be available through the Fondren Library's electronic course reserves called ARES, see https://rice.ares.atlas-sys.com/ares/
5. Other readings may be available through our course website on Owlspace.

Course Overview

The purpose of this course is to prepare students to become future engineering leaders. Engineering leadership is an emerging innovation in both education and practice and our course will prepare students to begin their development journey toward this end. The course is a front-end requirement for RCEL's engineering leadership certificate and premised on the assumption that leadership is an honorable activity that can be learned.

Course Format

Our class is designed around multiple learning methods, including lectures and discussions, peer group learning, case studies, videos, presentations, guest speakers, role plays, and other experiential learning activities. The readings for the class include a combination of academic journal articles, practice-oriented articles, book chapters, videos, and other materials. Most of these readings review theories or practical actions that pertains to specific leadership topics.

Learning objectives and domains

- To formulate and articulate a personal point of view about the meaning of engineering leadership, and why it is important
- To identify and assess the skills and motivations associated with effective leadership
- To develop personal and interpersonal leadership skills
- To begin a multi-year plan for self-directed achievement of personal and professional goals

RCEL Competency Domains

Skills Learned in ENGI 140

- Leading positive change
- Communicating a vision
- Managing oneself
- Building relationships
- Giving and receiving feedback
- Building emotional intelligence
- Acting on courage and wisdom
- Developing sources of power
- Exercising influence
- Adaptive learning styles
- Analytical problem solving
- Setting and achieving goals
- Managing stress
- Developing personal skills

Grading

25%	Reflected Best Self paper
30%	Exams
10%	Leader Journal
15%	Interviews with engineering leaders
15%	Movie Review
5%	Class Participation

Reflected Best-self Paper (25%)

One of the most important attributes of a successful leader is self-knowledge. The purpose of this exercise and paper is to enable you to learn more about your own unique strengths as a potential leader (and leader). Based on the self-assessments we will complete throughout the semester and on targeted feedback from others, you will discover some of the talents, competencies, and principles that define who you are and the kind of leader that you can become. This paper will require a considerable amount of self-exploration on your part, but the results can become one of the most valued learning outcomes of this class.

Many of the skills and other personal attributes learned in this course can be measured. The assessments located at the beginning of each textbook chapter will be used to measure these leadership attributes. Other assessments will be provided either on paper or via online surveys. Instructions for submitting the results of these assessments will be discussed in class. Completion of all of these assessments is required for the class and become a formal part of the RBS paper.

The results of assessments can be used for many developmental purposes, including the creation of the Leadership Development Plan. The RCEL Leadership Development Plan will begin in this class and evolve

throughout the RCEL certificate experience. The Leadership Development Plan will be a formal part of the Reflected Best-Self Paper, and is used establish concrete, actionable, and measureable "next steps" in your development. A detailed outline of the specific content and format will be provided in class.

Complete instructions on the content and format for this paper will be provided in class and are in Canvas. The overall content of the paper will be developed throughout the semester following a SMART goal plan. The final, complete version of the paper is due as noted on the syllabus. Late papers will not be accepted.

Leadership Development Plan (included in the RBS paper)

The Leadership Development Plan (LDP) will be used as a tool for planning, measuring, and demonstrating your personal development throughout the certificate experience. It is a living document that should be further developed as you gain additional knowledge and insights. This plan will also be used for coaching and feedback throughout the RCEL certificate experience and, we hope, in your post-Rice development.

The deliverable should be a summary of the requirements provided in a separate document. It should draw heavily from the self-assessments that are part of the course reading materials and from the external feedback requested by the student. Grading for this deliverable is explained in the guidance document in Canvas.

Individual Class Participation (5%)

Students will be expected to actively contribute to class discussions for several reasons. First, we will utilize case studies and other methods of active learning that depend on class discussions. Second, your ability to express your ideas effectively is essential to leadership and finally, and most importantly, everyone learns more through active engagement.

Class participation grades are based on attendance, contributions to class discussions, and engagement in peer group learning. The quality of in-class contributions will be based on the following:

- **Accuracy:** comments are informed by the assigned readings.
- **Relevance:** comments contribute meaningfully to the flow of the discussion**.**
- **Creativity:** comments reflect original perspectives that stimulate further discussion.
- **Judiciousness:** comments are well reasoned, persuasive, and moderated (i.e. frequency is neither too high nor too low).

In order to make sure that we hear from everyone in class, I will frequently call on students throughout the semester.

Many of the class sessions will be structured in small group discussions that focus on specific leadership development topics, all of which align with the Reflected Best Self paper and the RCEL Leadership Framework. Everyone will engage in these groups with rotating responsibility for discussion leadership. Faculty will assign these groups early in the semester and more guidelines will be provided about the scope and process for these discussions.

Exams (30%)

There will be weekly exams consisting of 10 multiple-choice, true/false questions, and short answer questions. They will be based on readings, lectures, and class discussions. The tests will be administered online in Canvas

Make-up exams will be administered only under circumstances involving serious and documented illnesses, university-excused absences, a death in immediate family, or other major event of comparable seriousness. If such an event occurs, students must inform me immediately to coordinate a make-up. Documentation will be required.

Leadership Journal (10%)

Part of the learning process for mastering leadership skills is a focused reflection on experiences, and recording the personal observations and insights gained. This is best accomplished through the use of a "leadership journal" maintained by the student. In this course, each student will be provided a journal to use for documenting leadership experiences during the course of the term. It is expected that the student will hand write their reflections in the journal based on weekly practice assignments. The journal is for the personal use of the student in formulating the leadership development plan that is part of the RBS paper. I expect students to schedule at least one office visit with either of the instructors to review progress, answer questions, and check the use of the journal.

Movie Review (15%)

Students in the course this semester will write a short review of a movie (selected from a list provided by the faculty). In this review, the student will critically analyze the story, events, and characters from a leadership perspective. This analysis should draw from the lessons and readings in the course. This paper will be due as noted on the syllabus.

Interviews with Engineering Leaders (15%)

During this semester, students will pair up to interview at least two engineering leaders of your choice. Examples may include engineering project leaders, leading technical experts, entrepreneurs who are engineers, or other leaders that are trained engineers. If you have any doubts about whether an interviewee will qualify for this assignment, please let me know prior to conducting the interview. The paper should be a five-page (maximum), double-spaced summary of the insights you gained from the interviews. A guide for conducting the interview will be provided in Canvas.

The purpose of these interviews is to provide students with the opportunity to learn about how course concepts and other materials relate to the real world of leaders in engineering or other contexts. It is also intended for students to explore what differentiates an engineer from an engineering leader.

Class Norms

- Open debates and disagreements about ideas are encouraged.
- Do not engage in distracting side conversations while others are talking.
- Turn off cellular phones before class begins.
- Use laptops only for taking notes; otherwise they should remain closed.
- Raise your hand before speaking.

- When you send us email, please include ENGI 140 in the subject line

General Course Expectations

Preparation	Plan to come to class having read the readings for the day and prepared to contribute to class discussions.
Proactivity	We encourage students to be proactive in both planning and working. If you are experiencing - or anticipate experiencing - any problems, difficulties, or uncertainties, then let us know ASAP.
Punctuality	Plan to come to class *on time* and complete all assignments *on time*.
Personal Responsibility	We expect all students to take responsibility for their learning, course obligations, and commitment to academic honesty.

Rice Honor Code

Students are responsible for maintaining the highest standards of honesty and integrity in their work and conduct. Students should be familiar with what constitutes plagiarism and always cite proper references of outside materials. Students should abide by the honor pledge they made upon entering Rice and include the following statement on all submitted assignments; “On my honor, I have neither given nor received any unauthorized aid on this (paper or exam)”.

Special Needs

Let us know during the first few weeks of the semester if you have disability needs and we will do what we can to accommodate these needs. Students with disabilities should contact Rice Disability Support Services at 713.348.5841 or http://dss.rice.edu.

Schedule, Topics, and Activities

Syllabus may change slightly to accommodate unplanned opportunities or circumstances.

Date	Topic and Readings	Class Activities
8/24 (1)	**Course Overview** • Use of ARES, CANVAS, HBS • NEO/IPIP Personality Assessment • RCEL Competency Framework • Bloome's Taxonomy • Goal Setting • Introduction to the RBS Paper & Template • Requesting external feedback (Due week 6 – September 30) • Introduction to the Engineer Interview (Due week 6 – September 30) • The Leadership Journal **Assignments for next week** • Complete the IPIP-NEO personality self-assessment from http://www.personal.psu.edu/j5j/IPIP/ipipneo120.htm • Read the following in Whetten & Cameron Introduction Time Management pp 95-100 • National Academy of Engineering (2004) *The Engineer of 2020: Visions of Engineering in the New Century*. National Academies Press. Review the first four chapters, focusing especially on chapters three and four. • Available for free online http://books.nap.edu/catalog.php?record_id=10999 • Start Leadership Journal with initial thoughts on leadership Describe a leadership experience you have had. Write your thoughts about the Engineer of 2020 readings	• Course overview and introductions • Introduction to the RCEL Leadership Framework • Templating a SMART Goal • Overview of the RBS paper • Start the Leadership Journal

8/31 (2)	**Engineering Profession** • National Academy of Engineering (2004) *The Engineer of 2020: Visions of Engineering in the New Century*. • Interpretation of the NEO/IPIP assessment **Assignments for next week** • WC – Management Assessments for Chapter 1 (Owl-Space) • WC Read Chapter 1 8th edition pp 57-83 9th edition pp 44-67 • Do the Motivation to Lead Assessment (Owl-Space) • Leadership Skills Practice & Journaling Write your reflections on the outcomes of each Assessment from this week's assignment	• Discuss readings • Technology timeline demonstration • NEO/IPIP discussion •
9/7 (3)	**Self Awareness** Discuss the following: • Sensitive Line • Cognitive Style • Locus of Control • Tolerance of Ambiguity • Motivation to Lead • Personal Vision • Analyzing a case study **Assignments for next week** • Do WC Chapter 2 Self Assessments (Owl-Space) • WC Read Chapter 2 – Stress Management 8th edition pp 112-146 9th edition pp 90-121 • Emails sent for RBS feedback • Visit CCD – Introduce yourself to either Nicole van den Heuvel or Jessica Campbell. Get their business card (signed and dated). Pick up a copy of the recommended Resume format • Write your resume (no more than one page) • Leadership Skills Practice & Journaling Write your reflections on the Chapter 2 self-assessments, and how you manage stress Write your reflections on the CCD visit	• Discuss readings • In-class exercises on Motivation to lead •

9/14 (4)	**Managing Personal Stress** • Elements of Stress • Managing Stressors • Eliminating Stressors • Developing Resiliency and Well Being • Stress Reduction Techniques **Assignments for next week** • Do WC Chapter 3 self-assessments (Owl-Space) • WC – Read Chapter 3 – Solving Problems Analytically & Creatively 8th edition pp 174-209 9th edition pp 139-172 • Read Dina Cappiello (2005) In Harm's Way. The Houston Chronicle (in Owl-space) • Leadership Skills Practice & Journaling Write your reflections on Chapter 3 self-assessments	• Discuss readings and individual reflections •
9/21 (5)	**Solving Problems Analytically and Creatively** • Steps in Problem Solving • Impediments to Solving Problems • Blocks • Fostering Creativity **Assignments for next week** • Do WC Chapter 4 self-assessments (Owl-space) • WC – Read Chapter 4 – Communications 8th edition pp 239-265 9th edition pp 190-215 • Complete Engineer Interview Assignment • Receive external feedback • Leadership Skills Practice & Journaling Write your reflections on Chapter 4 self-assessments	• Discuss readings • Turn in CCD business cards • Group discussion of the "In Harm's Way" article
9/28 (6)	**Communications** • Coaching and Counseling • Supportive Communication • Effective Listening • Barriers to Communication • Mentoring	• Discuss readings and individual essays • **Engineer Interview Due** • **External Feedback Due**

	• Giving and Receiving Feedback • Importance of Trust • How to Prepare a Case Study • Writing good paragraphs – Guest Speaker Assignment for next week • Do WC Chapter 5 self-assessments (Owl-space) • WC – Read Chapter 5 – Gaining Power and Influence 8th edition pp 283-309 9th edition pp 228-247 • Read and prepare case study for the Jonah Creighton Case (HBS Coursepack) • Leadership Skills Practice & Journaling Write your reflections on Chapter 5 self-assessments	
10/5 (7)	**Building Power and Influence** • Key Concepts/Definitions • Abuse of Power • Influencing Strategies • Neutralizing Influence Strategies • Jonah Creighton Case Overview • Leadership Development Plan Overview **Assignments for next week** • Complete the Rokeach Values Assessment (Owl-space) • Do WC Chapter 7 self assessments (Owl-space) • Read WC Chapter 7 – Managing Conflict 8th edition pp 376-403 9th edition pp 306-332 • Jane Dutton and Emily Heaphy (2003) The power of high quality connections. In Cameron, K., J.E. Dutton and R.E. Quinn, Positive Organizational Scholarship (San Francisco: Berrett-Koehler), pp. 263-278. • Complete the Movie Review Assignment • Leadership Skills Practice & Journaling Write your reflections on the Values assessment Write your reflections on Chapter 7 self-assessments	• Discuss readings • Skill practice: Jonah Creighton Case Role Play • Discuss Leadership Development Plans

10/12 (8)	**Managing Relationships**
	• Emotional Intelligence
	• Managing Conflict
	• Role of Values and Character
	• Networking
	  • Use of LinkedIn
	  • Guest Speaker
	  • Owl Mentoring Network
	
	Assignments for next week
	
	• Establish LinkedIn account
	• Do WC Chapter 6 self-assessments (Owl-space)
	• Reading: Peter Drucker, "Managing Oneself" (HBS Coursepack)
	• Read the Guidelines for the LDP (Owl-space)
	• Leadership Skills Practice & Journaling
	  Write your reflections on Chapter 6 self-assessments
		• Discuss readings
		• RBS Progress Check
		• **Movie Review Due**

10/19 (9)	**Preparing Your Leadership Development Plan** • Using the Leadership Framework matrix • Prioritizing competencies • Selecting goals **Assignments for next week** • Nansook Park, Christopher Peterson, and Martin E. P. Seligman (2004) Strengths of Character and Well–Being, Journal of Social and Clinical Psychology, pp. 603-619. (ARES) • Do the Motivation to Lead self-assessment (Owl-space) • Leadership Skills Practice & Journaling Write your reflections on the competency prioritization exercise and the MTL self-assessment	• Using the RCEL Leadership Framework matrix • Methodology for prioritization of competencies
10/26 (10)	**Building Character, Values, and Principles** • The Art of Followership • Building Trust • Motivation to Lead **Assignments for next week**	•

	• **Do the remaining WC self-assessments (Owl-space)** • Read and prepare case study for the Martha McCaskey Case **(HBS Coursepack)** • Leadership Skills Practice & Journaling Write your reflections on the McCaskey case study	
11/2 (11)	**Ethical Decision Making** • Framework • Challenges in the Engineering Profession • Martha McCaskey Case Overview **Assignment for next week** • Read and prepare case study for the Karen Leary Case (HBS Coursepack) • Leadership Skills Practice & Journaling Write your relfections on the Karen Leary Case	• Discuss readings and individual essays • RBS Progress Check • Group discussion on building trust • **Skills practice:** Martha McCaskey case and role play • LDP Draft Due
11/9 (12)	**Case Study Coaching Scenarios** • Karey Leary Case Study Overview **Assignment for next week** • Hogan and Kaiser (2005) What we know about leadership. *Review of General Psychology*, pp. 169-180. In ARES. • Leadership Skills Practice & Journaling Write your reflections on the Hogan and Kaiser reading	• Discuss readings • Skills Practice: Karen Leary Case Study and Role Play
11/16 (13)	**Group Facilitation Skills** • Facilitating a group discussion • Conducting a Post-mortem **Assignment for next week** • View engineering professor Randy Pausch's "Last Lecture" at http://www.cmu.edu/randyslecture/	• Practice influence styles

	• Clayton Christensen (2010) How will you measure your life? *Harvard Business Review*. • Leadership Skills Practice & Journaling Write your reflections on the Randy Paush video	
11/23	**No Class – Thanksgiving**	
11/30 (14)	**Last Day** • Exam Review • Course Post-Mortem • Summarize and synthesize class experiences	• Reflected Best Self Paper due Friday 4/22, 5:00 pm

Major Assignment Due Dates

Assignment	Weight	Due Date	Reference
Leadership Journal	10%	After week 7	Lecture Week 1
Engineer Interview	15%	Sept 30	Guideline provided in class and in Owl-space
External Feedback		Sept 30	Guideline provided in class and in Owl-space
Movie Review	15%	Oct 21	Guideline provided in class and in Owl-space
Leadership Development Plan Draft		Nov 2	Guideline provided in class and in Owl-space
Leadership Development Plan Final		Nov 23	Part of the RBS Paper
Reflected Best Self Paper	25%	Nov 23	RBS template in Owl-space